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RHYTHM AND THE SCIENCE OF POETRY.

MR. MARK H. LIDDELL, formerly of the University of Texas, has written a little book* on the scientific study of English poetry which is not without interesting suggestions. It is a pity, however, that he should have adopted a tone of such revolutionary violence as is likely to discredit what is really valuable in his work. There were brave men before Agamemnon's time, and there have been "scientific" students of verse even before this present year of grace. And is it quite prudent for a writer on a subject which has been treated by a succession of sincere scholars through many centuries to assert so frankly, whatever his secret thoughts may be, that all who preceded him were mere indulgers in empty metaphysics, silly idolaters before those awful *idola* of error which Bacon discovered and laid bare in the market place and elsewhere? "The conclusion of the whole matter," says Mr. Liddell at the end of his treatise, "points but in one direction—the necessity of considering literature as material of science, and not as a subject for pleasant talk."

Now Mr. Liddell's consideration of literature as material of science is divided into two parts, the first having to do with a general discussion of the elements of poetry, the second being confined more exclusively to rhythm in verse. In summing up the argument of the first part he expresses himself as follows (p. 140):

> The general notion of poetry we thus obtained was: ideas normally formulated in the terms of correlated sound-group-images, possessing the general and abiding human interest of literature, and rendered æsthetically interesting by being couched in recognizably æsthetic Verse Form. Or, stated as a formula: x + HI + VF.

You see the author has been at some pains to avoid "pleasant talk" and to be strictly scientific. He lets x stand for the underlying idea of the poem, HI for its human interest, and VF for its verse form. A poem, in other words, must contain some thought or idea expressed in normal language; it must further possess some general human interest; and it must be in verse form. Why, of course; we all know that. M. Jourdain, in the play, was amazed to learn that he had been speaking prose all his life; on translating Mr. Liddell's formula we are flattered to find that we have been thinking, if not speaking, science all along without ever suspecting it. The pity of it is that our dullness should have required one hundred and forty pages of strenuous argument to receive such enlightenment. And, seriously, is it not regrettable that jargon of this kind should be allowed to drown some really clever bits of criticism? For instance, the contrast instituted (p. 30 ff.) between Shakespeare's "After life's fitful fever he sleeps well" and the same thought in prose form, is neatly done and is interesting, though it may contain nothing that borders on revolutionary originality.

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* "An Introduction to the Scientific Study of English Poetry." By Mark H. Liddell. New York: Doubleday, Page & Co. $1.25 net.

But it is the second part of the book which forms the heart of Mr. Liddell's argument; and if I have seemed to dwell at too great length on the introductory matter, it was in the desire to set forth the peculiar tone that has crept into the scientific discussion of rhythm from various literary sources. It is in this second part that the author pours out the vials of his wrath against his predecessors who were reckless enough to contradict him by anticipation. Indeed, the desired dispassionateness of scientific research is more than once broken in these pages by a recrudescence of the old and rancorous debate between the ancients and the moderns. That debate was amusing when Swift sent forth his "Battle of the Books;" it is hardly amusing to-day. And then it is so likely to carry a man away from calm investigation into dreary outbreaks of the *odium philologicum*. Any one not blinded by this malign disease might see, you would suppose, that the contestants on both sides are equally wrong-headed —both those who frenetically deny any similarity between classic and English rhythms and those who obstinately uphold their complete identity.

As for the upcropping of this *odium philologicum* in the present treatise, one wonders a little at the *wherefore*. Part of its animus, no doubt, is due to the author's inadequate knowledge of the classics. For instance, a very little reading would have prevented such a categorical statement as this (p. 112), "But [in contrast to the English] there is ample evidence to show that an absolute and fixed proportion [between long and short syllables] did exist in the classic languages;" or this (p. 65), "We shall look in vain in Greek poetry for an æsthetic appeal based upon variations of intensity of syllables." Aristoxenus, more than two thousand years ago, exposed the folly of that first error; and as for the second, the weight of evidence is strongly in favor of supposing that the feet in a Greek verse were marked off by a slight "intensity of syllables." That (p. 26) the author speaks disparagingly of the "vatus insanus," we would willingly charge to negligent proof-reading were it not that elsewhere (p. 294) he, though a professed student of Shakespeare, misquotes the bard so as to achieve the rhythm, "O nymph, in thy *or*isons."

But in part Mr. Liddell's celestial ire against the classics is justified by the infinite confusion wrought in English prosody by the ill-advised critics, from Gabriel Harvey down, who have failed to distinguish between the nature of quantitative measure in Greek and in the Teutonic languages. So irritating is this confusion to Mr. Liddell's Anglo-Saxon sensibilities that he goes to the other extreme, and denies that the length or shortness of an English syllable has anything whatsoever to do with the forms of English verse—although he does elsewhere admit grudgingly the existence of quantitative distinctions in English pronunciation. Rhythm, he thinks, is in nowise determined by the measurement of time but by the counting off of accented and unaccented syllables. Just why he should involve this incomplete and often exploded theory in such a fury of hard language, it is not easy to say. Perhaps he deems it scientific to be obscure. "We have determined," he writes in conclusion (p. 310), "that the fundamental element of our English verse-punctuation is that concomitant of ideation which we have called attention-stress." This is a "scientific" (it seems rather metaphysic) statement which may be interpreted to the merely literary by explaining that "verse-punctuation" means feet; that "attention-stress" means stress or accent, which of course catches the attention; and that "concomitant of ideation" implies that the accent is governed by the thought. To such a pass has the *odium philologicum* brought us!

The wonder of it all is that so simple a matter as verse-rhythm should have raised so noisy a tempest. I am tempted to discuss the subject briefly, affecting some assurance of tone, not because I hope to introduce scientific accuracy where hitherto empty rhetoric has reigned supreme, but contrariwise because the whole subject has already received such adequate treatment by others. From three readily accessible books one may learn all that is essential to English prosody—"The Science of English Verse," by Sidney Lanier; "Chapters on Greek Metric," by T. W. Goodell; and "Englische Metrik," by J. Schipper. Lanier's brilliant work is unexceptionable as a study of the *ideal* or *model* verse, but fails to consider the variance between the *ideal* and the *actual* rhythm. A large part of Prof. Goodell's volume deals with this very question, and thus supplements Lanier's theory. Prof. Goodell is concerned primarily with Greek rhythms, but in his third chapter he gives the clearest and sanest discussion of rhythm in general that I have yet seen—and to my sorrow I have read much on the subject. Dr. Schipper's volumes form a work of vast *Gelehrsamkeit* and are invaluable as a storehouse of material.

But as a text for my explanation I choose rather to take the statement of one who certainly cannot be accused of deficient science, of one who is indeed recognized by the scientific world as the highest possible authority in all questions of sound. In Helmholtz's "Tonempfindungen" these words may be found (Ellis's Translation, p. 388):

> The scientific, as well as all other measurement of time, depends on the rhythmical recurrence of similar events, the revolution of the earth or moon, or the swings of a pendulum. Thus also the regular alternation of accentuated and unaccentuated sounds in music and poetry gives the measure of time for the composition. But whereas in poetry the construction of the verse serves only to reduce the external accidents of linguistic expression to artistic order; in music, rhythm, as the measure of time, be-

longs to the inmost nature of expression. Hence also a much more delicate and elaborate development of rhythm was required in music than in verse

From this genuinely scientific statement the three laws of verse-rhythm may be formulated as follows:

I. Rhythm in verse is not the product of either classical or Anglo-Saxon pedantry, but is a branch of acoustics and is amenable to the great rhythmic law of nature.

II. Rhythm in verse, like all rhythm, is a measurement of time marked off by the regular recurrence of similar events.

III. Rhythm in verse is a mere approximation, much less absolute and regular than rhythm in music, which is nearest akin to it.

Let us examine these three laws in order.

I. First of all, then, rhythm in verse is a branch of the scientific study of sound, and has nothing to do with grammar or logic or numbers or thought. It is as amenable to law as any other phenomenon within the realm of acoustics. To speak of rhythm in numbers or the rhythm of thought is a mere metaphorical use of words, an introduction of metaphysics where science should reign. Rhythm may be an instrument to express thought or emotion, and in this way thought or emotion may govern rhythm; but the rhythm remains as distinct from the thought or emotion as the swaying of our limbs from the nerve impulse that moves them. Rhythm is purely a matter of the senses. Doggerel verses which convey no meaning may still be highly rhythmical.

II. Now every appeal to the senses must be some act of energy perceived through the media of space and time. Symmetry has to do with phenomenaas determined in space;rhythm, with phenomena as determined in time. To distinguish: Suppose a man at a blackboard to be drawing a continuous line. If this line in the end produces a regularly repeated figure, the design is symmetrical. The time of the drawing and the rapidity of the man's movements are not here concerned. If, however, the figure traced be without design, but if the drawer at regular intervals of time makes some peculiar and repeated movement with his hand, then the resulting figure drawn will not be symmetrical, but the motion of the drawer's hand while drawing will be rhythmical. Symmetry is static, rhythm is kinetic.

The commonest form of rhythm is, of course, the rhythm of sound. And here let it be noted that such rhythm is not a mere division of time (which would be a metaphysical conception), but a division of sound in time. To illustrate: A succession of perfectly similar sounds at regular intervals of time is not rhythmical. There is inherently no rhythm in a succession of equal drum beats at intervals of a second, or in a regular succession of indistinguishable whistles. To produce rhythm, you must mark off certain sounds so as to divide the series into groups occupying equal measures of time. For example, there is rhythm in the drum beats to which we march; there would be rhythm in a succession of whistles such as an engine emits on approaching a road.

Now there are three properties of sound which may be so used in marking off these groups. At regular intervals of time the sound may be distinguished from the others (1) by duration, or (2) by pitch, or (3) by stress or loudness. The first rhythm would undoubtedly be the weakest, the third would be the strongest. Any combination would be still stronger, as tending to mark off the intervals of time more emphatically to the ear.

Now this rhythmic sense is one of the most insistent in human nature, so insistent that, given any regular succession of sounds, it produces the illusion of rhythm when none actually exists. For instance, it is impossible to listen to the ticking of a clock without imagining some difference between the alternate strokes such as will mark off the sounds into rhythmic groups. Every other stroke seems to be at once a little longer, a little higher in pitch, and louder—tic tác, tic tác, tic tác, etc. That this difference of sound is imaginary becomes evident from the ease with which we may vary the succession at will. The conclusion is this: Rhythm exists only when some diversity of sound marks off regular intervals of time within each of which some sound occurs.

The application of this law to language is perfectly simple. Here the equal measurement of time is determined, (1) by the regular recurrence of syllables distinguished in length, in which case the rhythm may be called quantitative; (2) by the regular recurrence of syllables distinguished in pitch, in which case the rhythm may be called melodic; (3) by the regular recurrence of syllables distinguished in stress, in which case the rhythm may be called accentual. The practice of languages may vary among these three forms; but in all languages, where rhythm exists at all, the fundamental law of rhythm must be observed, there must be a periodic measurement of time. The tedious battle of the books is due to the fact that certain scholars, blinded by their classical predilections, emphasize the fundamental similarity of rhythm in all languages (in the classics and English, specifically), but fail to recognize the accidental varieties; whereas certain other scholars influenced like Mr. Liddell by their Teutonic studies, consider the accidental variation alone and are ill disposed to acknowledge any fundamental similarity. As a matter of fact, to make such a logomachy more inane, the rhythmic division of time in both Greek and English was probably marked by the same combination of the first and third manners—was at once, that is, quantitative and accentual. Only there is this distinction (which explains if it does not justify the dispute), that in Greek quantitative rhythm was strongly predominant, so much so that some scholars deny the presence of accentual rhythm at all, whereas in English accentual rhythm is predominant. Thus iambic rhythm in Greek is a series of equal measures of time, each measure containing a short syllable followed by a much longer syllable; but it is also practically certain that the long syllables were, as a rule, further marked by a slight stress accent. In English this iambic rhythm is a series of equal measures of time, each containing an unaccented syllable followed by a strongly accented syllable; but it is further true that the accented syllable tends, although not inevitably, to become slightly longer than the unaccented syllable. It is therefore proper to call Greek rhythm quantitative and English rhythm accentual. It is, however, an absurdity to say that the length of syllables has nothing to do with English rhythm. The order of quantities within the feet may sometimes vary, but the quantity of the combined syllables within each foot must be such as to divide the verse into measures of equal time, exactly as music is divided into bars.

Quantity is indeed the root of the whole debate, and it may be well to insist on the question a little more. The discussion has arisen from a misunderstanding of quantity in both the classics and English. The quantity of a Greek syllable is determined by fixed laws of pronunciation and is always the same, and, further, a long syllable is reckoned as occupying twice the time of a short; hence quantitative rhythm in Greek assumes the simplicity of an arithmetical ratio. In English, on the other hand, neither of these laws holds good; hence the *non sequitur*, because English quantity does not follow the laws of Greek quantity therefore there is no quantity at all in English. But, unless one is willing to assert that such a syllable as *bursts* is not longer in pronunciation than *at*, it is folly to deny the existence of quantity in English. Only it remains true that quantity in English, while fixed by the laws of enunciation in some syllables, varies in other syllables according to their emphasis in the sentence. And, further, the scheme by which a long syllable in Greek is reckoned as double a short syllable is—and was so recognized by the most authoritative of Greek metricians—a mere fiction of the grammarians to simplify the schematization of rhythms. If Mr. Liddell, and others who accept literally this ideal schematization, should reflect a moment (not to mention the profit of reading the authorities on the subject), they would see that no language is or ever was pronounced with such wooden regularity. It is only true to say that the difference in Greek between long and short syllables, though varying, was very decided, and approximated roughly the ratio of 2 to 1. In English the difference in quantity is ordinarily much less than in Greek, but to assert that quantity has no function in English rhythm because English quantities do not have the Greek ratio of 2 to 1, is to fall into a double and really unpardonable error.

A concrete comparison will throw light on the confusion.

The first verse of the "Odyssey" reads and is scanned as follows:

Andra moi	ennepe	mousa po-	lytropon	hos mala	polla
/	/	/	/	/	/
— ⏑ ⏑	— ⏑ ⏑	— ⏑ ⏑	— ⏑ ⏑	— ⏑ ⏑	— —

The first verse of "Evangeline" is scanned:

This is the	forest pri-	meval the	murmuring	pines and the	hemlocks
/	/	/	/	/	/
— ⏑ ⏑	— ⏑ ⏑	— ⏑ ⏑	— ⏑ ⏑	— ⏑ ⏑	— —

Now it will be observed that these two hexameters are essentially the same. They both consist of six equal measures of time, each measure normally containing one long accented syllable followed either by two short unaccented syllables or by one long unaccented syllable. But in their secondary characteristics the two verses differ considerably. In the Greek verse the initial long syllables are much longer than the short syllables, are in fact approximately equal to the time of the two short syllables taken together. They are thus sufficiently distinct to mark off the measures by their quantitative value. But these initial syllables have also a slight stress accent, which is the pure result of the inherent rhythmizing instinct of the human mind. This rhythmical stress accent is made possible by the fact that Greek words in normal prose enunciation possess no regular stress accent at all such as English words possess. In the English verse, on the contrary, the initial syllables all have a normal stress due to the regular verbal or sentence accent, and this stress is reënforced by the rhythmizing instinct. Hence the accent alone is sufficient to mark off the measures, and it is possible for the arrangement of the quantities within a measure to vary considerably, providing only that the sum of the quantities remains fixed. In the foot "pines and the" the first syllable is approximately the length of the two following syllables together; in the foot "this is the," however, the three syllables are about the same; and between these two extremes every shade of difference may exist. Only it will be found a pretty constant rule that the first syllable is slightly longer than the others if there are three in the foot, and a still more constant rule that the measures of the verse consist in full of equivalent periods of time. There is quantity in both Greek and English, but it is quite proper to designate the Greek verse as primarily quantitative, and the English verse as primarily accentual.

I have as yet said nothing of the pitch accent, for the reason that the subject is one of some obscurity. It is, however, almost certain that the regular accent of a Greek word was a pitch accent, as distinguished from the English stress accent. It did not fall necessarily on the same syllable with the rhythmical stress accent, and produced thus something of the effect of melody in the recitation of Greek verse. In English this pitch accent is a more complicated question. It plays a little-recognized part in the function of rhythm, but my own observation leads me to believe that it is often used to mark off the time measurement, when the stress accent, by some apparent irregularity of construction, does not correspond to the rhythmic divisions.

III. But all this has to do with the ideal or model rhythm, and we have still to consider the third law derived from Helmholtz's statement—a law so important that the neglect of it in Sidney Lanier's treatise vitiates to a certain extent that poet's brilliant theory. In the actual reading of poetry two distinct, even contradictory, impulses will be found at work—the rhythmizing instinct and the normal unrhythmical enunciation of the language. The result is a compromise shifting toward one extreme or the other.

As for the rhythmizing instinct in verse, that is merely one clause of a law which runs through every manifestation of energy, of a law so universal that it would appear as if the great heart of nature beat with a regular systole and diastole, sending impulses of rhythmic motion through every pulse of the world. So strong is this instinct in us that a child in reading verse falls unconsciously into a monotonous, undeviating singsong which without hesitation sacrifices sense and ordinary pronunciation. When a child recites his "Mother Goose" you may beat time to his words as easily as you beat time to a dance tune. The process of adapting the ordinary pronunciation of language to this rhythmic impulse is called *plasma*, and was observed by the Greek metricians long ago, as it may readily be observed by us to-day. By *plasma* we lengthen a syllable here and shorten a syllable there, so as to get the exact measure of time within a foot, and where lengthening is not sufficient we insert a pause corresponding precisely in its rhythmical effect to the pauses in music. How exact the rhythm may be made through *plasma* is exemplified in the curious game of "Pease porridge hot," as I was taught it, or "Bean porridge hot," as Prof. Goodell calls it, from a Yankee boyhood presumably. I shall not attempt to explain—what every one must have learned as a child—the manner in which the recitation of these words is accompanied by a play of the hands which marks off the rhythm with absolute regularity.

Pease porridge hot
Pease porridge cold
Pease porridge in the pot
Nine days old.

So the words run, and the rhythm falls into this precise scheme, the macron representing twice the time of a breve, and an inverted v representing a pause equal in length to a breve:

–́ ◡ ◡ | –́ ∧ ∧ |
–́ ◡ ◡ | –́ ∧ ∧ |
–́ ◡ ◡ | ◡́ ◡ ◡ ∧ |
–́ – | –́ ∧ ∧ |

The result, however, of giving this rhythmizing instinct full play is to render our reading intolerably monotonous and to sacrifice the sense to meaningless sound. The ordinary teacher in our schools, seeing this deplorable effect, drills his pupils to avoid this instinct and to read verse "just as if it were prose." As a consequence, most men, being neither natural nor educated, but only half-educated, do indeed read verse as if it were prose, succeeding so admirably that the rhythm is lost altogether. For it must be observed that the normal pronunciation of language does not produce any such regular rhythm as the poet has before him in mind when he composes. Verse differs from prose in this: that in verse the words are so ordered that their normal pronunciation approximates closely enough to a rhythmical scheme to permit the rhythmizing instinct by means of *plasma* to produce a distinguishable rhythm without doing great violence to the sense. Hence no arrangement of words is really rhythmical to the half-educated ear which through false training resists the rhythmizing instinct. Poetry as read by most people is hardly, if at all, distinguishable from prose, unless it be for the recurrence of rhymes; and it is correct, I believe, to say that not a single actor on the English stage to-day recites blank verse so as to distinguish it clearly from prose. Edwin Booth was the last, so far as I know, to preserve a nice obedience to the rhythmizing instinct, while never sacrificing the sense to it.

The proper reading of verse is thus a cunning compromise between our rhythmizing instinct and the normal prose pronunciation of the words. The compromise varies with every reader and with each reader's differing moods; and for this reason, if for no other, any attempt to adopt a precise schematization for verse must fail of general validity. The old system of macrons and breves with the accent is probably the best, after all, so long as we remember that in Greek, and still more in English, such a system represents only a rough approximation of the reality. Listen to a good reader attentively, and for a while you will be able to beat time to the rhythm of the verse as accurately as to music; then suddenly, through some stress of feeling or some desire to avoid monotony, the rhythm will be loosened to an unmeasured flow of sounds, only to fall again into the regular singsong. The final impression suggests the rhythm of music, only much freer and more capricious than a musician could properly give to his performance. If we may trust a large number of anecdotes, the great poets, in reading their own verse, pronounced it with a strong singsong effect, showing that they had in their minds an ideal rhythm of perfect ratios, from which every deviation seemed to them an irregularity. It is probable, too, that the Greeks and Romans chanted their verse with a rhythm far more artificial than seems permissible to our more sophisticated ears.

PAUL ELMER MORE.